VETERINARY DIAGNOSTICS

PROGRAM PROFILE

Program Goal	Operate the diagnostic laboratory facilities to support veterinary disease prevention, detection, control, and eradication programs. Provide diagnostic assistance to the livestock and poultry industries to protect the Nation's animal health against foreign and domestic diseases.
Enabling Legislation	21 USC 114; Animal Industry Act of 1884.
Economic Significance	Benefits from this program are significant, given the large number and variety of cases submitted. Rapid disease diagnosis enables the program to initiate effective and cost-efficient control activities.
Principal Approach and Methods Used to Achieve Goals	A laboratory assistance program. Program methods include state-of-the-art diagnostic testing, providing diagnostic reagents, and performing differential diagnoses. The program also performs biotechnologically-derived laboratory procedures for disease eradication, export testing, and foreign animal and poultry disease diagnostic activities. These procedures enable APHIS to conduct increasingly definitive tests to decrease animal and poultry losses, enhance exports, and prevent the entry of foreign animal and poultry diseases.
History	When the National Animal Disease Laboratories were dedicated in 1961, their function was primarily research. In 1973, APHIS created the National Veterinary Services Laboratories (NVSL), which is now the center for diagnostic testing. Services range from a single lab test to comprehensive lab services covering all possible pathogens for a suspected disease outbreak. In FY 1979, the program was funded separately to reflect the high priority and volume of the NVSL workload. APHIS assumed responsibility from ARS for diagnostic testing and training activities at the Animal Disease Center at Plum Island, New York in 1984. NVSL established a Mycobacterium bovis serum bank in FY 1988 for use in developing new serologic techniques. In FY 1989 and FY 1990, NVSL began water analysis, serological testing, and the development of a serum bank for the National Animal Health Monitoring

System (NAHMS) as part of the National Swine Survey. User Fees were implemented in September of 1993 for certain diagnostic activities, including testing and producing reagents. These user fees are assessed to States, industry, universities, and other Federal Agencies requesting services from NVSL. User fees for new tests and services were implemented in FY 1998 including fees for isolation, identification, and serology tests.

State and Local Cooperation APHIS provides diagnostic services and reagents for States when special cases occur.

Involvement of Other Agencies FSIS, ARS, and FDA.

RESOURCE DATA

	Obligations		
	Direct	User Fees	Staff-Years (including User Fees)
FY 1997	15,920,819	1,392,640	220
FY 1998	15,720,891	1,676,000	221
FY 1999	15,965,792	2,528,000	216
FY 2000 (est.)	15,609,000	2,528,000	212
FY 2001 (est.)	17,678,000	2,528,000	218

	APHIS	Coop	Total	CCC	Contingency Fund
Cum.	$194,171,062	--	$194,171,062	--	$270,000

RECENT ACCOMPLISHMENTS

Diagnostic Support In FY 1999, NVSL played a strong role in the identification of emerging diseases by making the first isolation of West Nile virus (WNV) in the Western Hemisphere from Bronx Zoo birds and New York City area crows. NVSL isolated WNV from Long Island horses with neurologic signs. WNV is an arbovirus caused by blood sucking arthropods such as mosquitoes. This virus is of concern because of its human health implications and its threat to US animal export markets. In October 1999, Hong Kong stopped issuing permits for the importation of live poultry and hatching eggs from the United States due

to the presence of this virus. NVSL also identified an isolate of goose parvovirus from Pennsylvania. This virus was previously thought not to be present in the United States. Also during FY 1999, the Foreign Animal Disease Diagnostic Laboratory (FADDL) identified pudu pox (exotic capripox) in a zoo animal in Missouri.

During FY 1999, NVSL continued to implement an internationally recognized quality assurance program. NVSL focuses on improving customer service by responding to customer needs. NVSL developed and validated a series of serological tests to improve the diagnostic capabilities for testing horses imported into the United States for equine piroplasmosis, dourine, and glanders. The new tests are competitive enzyme linked immunosorbent assays that replace the complement fixation tests used for many years to exclude these foreign animal diseases from the United States. The new tests are better because reagents can be produced using *in vitro* methods, decreasing the use of live animals for reagent production. Trading partners in Asia, Europe, and South America have expressed an interest in acquiring this new test technology.

Check Tests

In FY 1999, NVSL completed and scored check tests for 33 diagnostic laboratories as a self-evaluation of proficiency in leptospirosis. The States of Georgia, Illinois, Kansas, Kentucky, Pennsylvania, Texas, and Washington each had two participating laboratories. The States of Alabama, Arkansas, California, Florida, Indiana, Iowa, Michigan, Minnesota, Montana, New Jersey, New Mexico, New York, North Carolina, Ohio, South Dakota, Tennessee, West Virginia, and Wisconsin each had one participating laboratory. Check tests were also sent to 52 diagnostic laboratories as a self-evaluation of proficiency in diagnostic bacteriology. There were five participating laboratories California and Virginia; three in Illinois and Pennsylvania; two in Canada, Indiana, Kentucky, Minnesota, New York, Tennessee, Texas, and Wisconsin; and one each in Alabama, Arizona, Arkansas, Colorado, Delaware, Florida, Georgia, Iowa, Kansas, Massachusetts, Michigan, Missouri, Montana, North Carolina, North Dakota, Ohio, Oregon, South Dakota, West Virginia, and Wyoming. The Serology and Bacteriology Committees of the American Association of Veterinary Laboratory Diagnosticians requested the

check tests; APHIS has the capability to provide this service.

Program Support

NVSL continued to support animal disease prevention, detection, control, and eradication programs and to provide diagnostic assistance to the livestock and poultry industries. NVSL received and tested 37,282 diagnostic submissions in FY 1999, including 7,678 for import/export testing. FADDL received and tested 354 diagnostic submissions. These represented 188 suspect foreign animal disease investigations, 36 import tests, 5 exports, 24 safety tests, and 25 reference cases including materials received from ARS, foreign countries, or collaborative projects. During FY 1999, NVSL continued to provide support for CSF and African swine fever serosurveillance for Puerto Rico (60,000 sera) and avian influenza surveillance (3,600 submissions).

NVSL tested 3,267 dip vat samples in FY 1999 for pesticide concentration in support of the cattle tick program. In addition, NVSL received 979 brains to test for bovine spongiform encephalopathy (BSE) and continued to support the BSE surveillance program. This allowed us to confirm that the United States in BSE-free.

Collaboration w/ Other Agencies

NVSL continued to look for opportunities to collaborate with others within and outside the Agency. The Laboratory tested tissue samples and environmental samples from more than 250 Yellowstone National Park bison for brucellosis during FY 1999. We did work for the Department of Interior and the States of Montana and Wyoming. NVSL also continued to collaborate with ARS on the safety of Brucella RB 51 vaccine in nontarget species.

The Laboratory tested approximately 1,200 elephant samples for tuberculosis during FY 1999. We used the reports in animal welfare inspections. NVSL also tested approximately 200 various marine mammals for the presence of brucellosis on behalf of the National Marine and Fisheries, the Washington Department of Fish and Wildlife, and Canada. Also, FADDL personnel collaborated with ARS in safety testing several historical avian influenza isolates for use by ARS in Athens, Georgia.

Diagnostic Test Methods

APHIS developed a nationally standardized proficiency testing system for brucellosis serology to determine the proficiency of individual analysts throughout the United States. We performed developmental work on diagnostic methods to differentiate *Taylorella equigenitalis*, the causative agent of Contagious Equine Metritis (CEM), from recently identified donkey strains of *Taylorella*. Two diagnostic methods, one serologic test and one polymerase chain reaction show promise in helping state diagnostic laboratories distinguish between the two. The NVSL worked with approved CEM laboratories in California, Kentucky, New Jersey, and New York to improve test protocols and establish uniform test methods.

Training Courses

APHIS conducted 4 formal training courses at NVSL, covering 12 days with 109 (34 State and 75 Federal) participants. These training courses focused on scrapie, pseudorabies, brucellosis epidemiology, and laboratory biosafety. NVSL personnel conducted training for 19 people from veterinary and human medical diagnostic laboratories and biologics companies in a serologic test procedure for the diagnosis of leptospirosis. Also, we provided equine infectious anemia training to 108 State or private participants, Johne's agent isolation and identification training to 3 state employees, complement fixation training to 5 participants (4 Federal and 1 State), avian influenza training to 2 State employees, and vesicular stomatitis complement fixation training to 1 State employee. We provided training in various subject areas to 42 international visitors for a total of 60 days. By training others we create a national and an international awareness among State, foreign, and private practitioners. This creates a network of professionals able to quickly detect and diagnose diseases, and thus provides a level of surveillance not otherwise available to us.